NOTE ON THE KATA-THERMOMETER.

By LEONARD HILL.

[National Institute for Medical Research, London, Feb. 1, 1922.]

In an article published in the MONTHLY WEATHER REVIEW,[1] in which I dealt with "Atmospheric Environment and Health," the kata-thermometer was described and formulae for it given connecting temperature and wind. These formulae were worked out in a small wind tunnel 12 inches in diameter, as, during the war, it was not possible to use the large wind tunnels in the National Physical Laboratory, owing to the pressure of airplane work there. Since the armistice these tunnels, from 3 to 7 feet in diameter, have been available for us to redetermine very exactly the "kata" formula for higher velocities. For low velocities we have used the whirling arm method, rotating the "kata" on the arm, which is moved through the air at known velocity, and making a suitable deduction for the "swirl effect."

The dry "kata" has proved most useful as an anemometer for determining the very low velocities of air movement which exist in rooms and workshops, and for this purpose the formula

$$H=(0.20+0.40\sqrt{v})\theta$$

should be used, where H=cooling power of the dry "kata"; v=velocity in meters per second, and $\theta=36°$ .5 C. minus the temperature of the air.

For velocities above 1 meter per second, the formula to be used is

$$H=(0.13+0.47\sqrt{v})\theta.$$

Using this formula, very good agreement has been obtained between measurements of wind made (1) by the "kata," (2) by standard cup anemometers.

The formulae and data are published in full in the *Proc. Roy. Soc. B*, 1922.

A CORRECTIVE NOTE ON RAIN-GAGES.

By S. P. FERGUSSON, Meteorologist.

[Weather Bureau, Washington, D. C., Feb. 23, 1922.]

The EDITOR has received the following letter from Dr. Charles Chree, Assistant Director of the British Meteorological Office:

It may interest you to know that we have here a very old raingage which embodies the principle illustrated in figure 11, page 385, and described on page 384 of the MONTHLY WEATHER REVIEW, volume 49 (July, 1921). It was an old gage when I first saw it nearly 30 years ago. The gage is described as Hick's patent (presumably J. J. Hicks's the instrument maker of Hatton Garden, London), but whose idea it represents I do not know. It had 24 receptacles, and was, I believe, intended to record a single day's rainfall, one hour's fall in each bucket. The spout was carried round by clockwork, exactly as illustrated in figure 11. For a daily record the arrangement had little to recommend it, especially at places where the rainfall is light, and it was always regarded here as a curiosity.

When the paper on improved gages was prepared the writer examined available descriptions of recording and totalizing gages published during the past 25 years without finding an instrument suggesting the multiple-collector gage referred to as "new." Following the receipt of Dr. Chree's letter, a brief examination of older literature was undertaken and a rereading of Symon's "History of the Rain-Gage" (*Quarterly Journal, Royal Meteorological Society*, 1891), revealed a brief reference to a gage of this pattern suggested by Leupold (1726), and another by Stutter (no date given); these references were overlooked by the writer when reading this paper many years ago. Also, Prof. Talman kindly supplied a a catalog issued by Hicks of London in 1887, illustrating an instrument similar in principle, patented and manufactured by him. Consequently, the statement that the principle of this instrument is new is incorrect.

In suggesting this form of gage the writer had in mind chiefly an instrument for use at isolated stations where precipitation is excessively large and recording gages can not be used. As Dr. Chree states, this instrument is not suitable for a region of light precipitation, and for general use it is far less convenient and accurate than a good recording gage.

[1] 48: 687-690, 1920.

THE AURORA OF MAY 14 TO 15, 1921.

By H. H. CLAYTON, Chief of the Forecast Division of the Argentine Weather Service.

The following reports of the brilliant aurora of May 14 to 15, 1921, which accompanied two immense spots near the center of the sun and lit up both hemispheres of the earth, have come into the Argentine Meteorological Office. Owing to the fact that few reports of aurora come from the Southern Hemisphere, I think these will be of interest to your readers.

From Cumberland Bay, south Georgia, to the director of the "Oficina Meteorologica Argentina," G. O. Wiggin, June 3, 1921:

DEAR SIR: Capt. P. Sórlle, of the Sandefjord Whaling Co., informs me that on the night of May 14 to 15 he saw the entire sky toward the southeast lit up as if by an immense fire. According to the account of Capt. Sórlle and other whalers there was a magnificent display of light which increased and decreased from time to time. They thought it arose from a volcanic eruption in one of the islands of the Sandwich group (lat. 58° S., long. 25° W.).

Capt. Sórlle was there in the year 1911 during the volcanic eruption of that epoch and escaped from the fire almost by a miracle, etc.

Respectfully,

THORLEIF HOXMARK.

Santa Cruz, Argentina, to the Director of the Oficina Meteorologica, Geo. O. Wiggin, September 9, 1921:

DEAR SIR: As requested, I am sending you the following description of the aurora of May 14, 1921. At 11:15 p. m. (23:15h) a luminosity was noted in the sky toward the south and south-southwest, so that a layer of cirrus and cirro-status could be clearly distinguished.

The appearance of the sky slowly changed as the luminosity increased and took on a tint at first slightly rosy, increasing in intensity until the color was almost crimson. The first pulsations were visible at 11:40 p. m. (23.40h), being at first of slight intensity and appearing in the form of short luminous rays in continual movement, as well in a horizontal as in a vertical direction.

Little by little the pulsations of the rays became stronger and more frequent, and they showed different forms, at times in visible movement, then disappearing and afterwards returning suddenly with new force.

Very frequently there were also rays as if a searchlight had been turned toward the zenith.

The spectacle lasted until 1:30 a. m. of the 15th, gradually decreasing in intensity and frequency, and finally there only remained the last-mentioned rays, which were directed toward the zenith.

There are some persons who say that the rays were seen until 4 to 5 a. m. of the 15th.

Respectfully,

H. WANGO.